THE VETERINARY RECORD

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EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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THE VETERINARY REPORT (B. OF A.) 1909.

A mistake occurred in our notice last week when comparing the prevalence of glanders in London and the rest of the country. For many years 80 per cent. of the cases were found in London. Last year instead of 80 to 10 being the proportion we unfortunately said 80 to 1, the figures showed 80 in London to 50 in the rest of the kingdom.

Sheep-scab is a disease that causes considerable loss and perhaps more worry. The number of outbreaks in 1909 was 685 which is 164 fewer than in 1908. The worst counties were Merioneth, Inverness, Carnarvon, Cardigan, and Chester. The Chief Veterinary Officer is not quite satisfied with the effects of the regulations. He says "the progress made towards eradication over the country as a whole is less satisfactory than could be desired." A great difficulty arises from the exigencies of the business of sheep-farmers to whom restriction on movement may cause very serious loss. At first sight it would appear that proper dipping at proper intervals would inevitably clear a flock, but the ways of the acari are elusive, and sometimes the dipping is not properly carried out. Entomologists have settled that the life cycle of the sheep acarus extends over a period of about 23 days, so that theoretically two dippings in this or a little longer time should be successful. Under the Sheep-scab Order a period of 56 days isolation of diseased or in-contact sheep is enforced, but cases of infection have been found in which periods of 70, 80, or 100 days have passed since they were dipped and sold apparently clean.

Three or four important questions remain to be answered, and these are receiving attention at the hands of the Board's officers in the field and at the laboratories. Two of them are—(1) The period of time after removal from affected sheep during which the acari and their eggs are capable of infecting other sheep; (2) the length of time during which the acari or their eggs may remain in a quiescent state upon sheep and subsequently give rise to scab? As the leading sheep-owners seem to give every assistance willingly and the present regulations are slowly having a good effect it may be hoped that next year's returns will show a further large reduction of the disease. When only some few "dirty" districts remain infected the Board will be right in making more rigid restriction on movement and more thorough compulsory dipping.

Parasitic mange is not scheduled for the whole country, but orders are issued when a Local Authority asks for them. Sometimes a county and sometimes a borough applies for the Order. At present the Parasitic-mange Order runs in Ireland throughout the country, in Scotland in three towns and two counties, in England in 17 counties and three large towns. It may have been good administrative tact to attack parasitic mange in this bit-at-a-time manner, but the time has come for issuing an Order generally. In London quite a large proportion of the outbreaks reported are in horses brought from a distance, and often from counties in which the Order is not in force. The same thing must of course occur in all large towns. If the disease is worth attention, surely it is absurd to attempt to stamp it out in one district whilst the neighbouring town or county does nothing to detect or control its spread.

Bracken Poisoning has come under the notice of the Board's officers. There seems a little doubt as to the exact cause, and veterinary practitioners might help to solve the question by reporting any cases coming under their notice.

The disease exists only from August to November, so now is a likely time for investigation. The animals are generally attacked at pasture. "The symptoms are high temperature, 104 to 107 F., loss of appetite, blood-tinged discharges from the mouth and nostrils, passage of blood from the bowels, pallor of the membrane of the eyes, great depression, coma and death in from 12 to 72 hours after the first appearance of symptoms."

"The lesions found after death are congestion of the respiratory mucous membranes and small hæmorrhages in its substance. The stomach and intestines are similarly congested; in the latter the wall of the tube in certain parts may be deep red in colour and greatly thickened by infiltration of blood. Blood may be present also in the lumen of the intestine. Areas of diphtheritic inflammation and distinct ulceration may also be present in the stomachs and intestines. The serous membranes show hæmorrhages in their substance as also may the heart muscle, the muscles of the body and the subcutaneous tissues." No wonder that some of these cases are reported as anthrax.

"The Cruels" in sheep is a disease we are surprised to hear "fairly prevalent on certain farms in Scotland." The report tells us—"The disease is characterised by sores on the lips, swelling of the face, and the appearance of cold abscesses along the course of the lymphatic vessels. Apparently the disease begins in the neighbourhood of the lips. The abscesses vary in size from a pea to a small walnut, in bad cases they extend down the lymphatics of the neck, and they may be found in the substance of the lungs. The contents of these abscesses is not like ordinary pus. The material is of a pale yellow colour, rather waxy in appearance

and very glutinous in consistence. The disease does not appear to affect very seriously the general health of the sheep until the lungs become invaded or unless the site of the multiple abscesses interferes with swallowing." Perhaps the gravest thing about "cruels" is that it is transmissable. The report relates an experiment in which a four-months old lamb cohabited with and fed out of the same trough as three affected ewes. In seven days it became distinctly ill, showing swelling of the lips and a few small sores. The illness lasted about ten days, the lesions healed in seventeen, and although the lamb has been under observation for several months there are no further signs of disease.

"Scrapy" is another sheep disease from Scotland only known in a limited area, but an area said to be extending. "Apparently the disease only affects ewes after they have had two or three crops of lambs. The symptoms are rather peculiar, and may at first be confounded with scab. One of the first signs is an itchy condition of the skin, which gradually becomes worse and compels the animals to constantly rub themselves against fixed objects. The skin shows no eruption as in the case of scab. Dipping has no curative effect, on the contrary it seems to intensify the symptoms. Eventually the animals die from emaciation after a miserable condition extending over months.

Certainly there is plenty of work for the Board's pathologists.

PARTURIENT REDWATER.

By Prof. A. E. Mettam.

I am not quite certain that I have understood, from the paper published in *The Record* for September 3rd, 1910, that Professor Dewar is convinced that a piroplasm is the cause of hæmoglobinuria or redwater in cattle, and this uncertainty in my mind is accentuated by the following quotation from his address. The reference is to a pamphlet or leaflet issued by the Board of Agriculture and Fisheries entitled "Redwater in Cattle (Bovine Piroplasmosis)." The quotation is as follows:—"While not prepared to accept the inference implied in the title given to the leaflet, I was only inclined to express the opinion that the designation given was still *sub judice*, rather than say it was wrong, to ask whether at the present time the verdict should not be one of "not proven!" This quotation I presume to mean that in the mind of the writer there was still a doubt as to the cause of redwater, and that the term piroplasmosis was only tentative and provisional. Surely there is no doubt by this time in the minds of any veterinarian other than a Rip van Winkle that the redwater of everyday practice is due to a piroplasm! Has it not been proved abundantly, by experiment and otherwise, not only at home but also abroad?

There are other points also in the address which are not altogether correct, as for instance under "Etiology" the writer says "an animal may be very ill of the disease and yet the parasites may not be found in the blood on examination, sometimes only about 1 in 200, while 3 per cent. is a full average number of the corpuscles to be affected." This is not correct in the vast majority of cases, there is no difficulty in finding parasites and the infection may be so heavy that the majority of corpuscles are invaded by parasites. It is only in the earliest stages, before clinical symptoms are evident, or when the acute stage has passed away and the urine is clearing up, that it becomes difficult to find the piroplasms. This is my experience after the examination of thousands of films of blood obtained in the field, and from experimental animals kept hourly and daily under observation.

As to the parturient form of redwater, I consider it is merely a recrudescence of a previous infection occurring at parturition. It is well known that an animal that has had redwater carried the parasites in its body, that its blood is infective. I refer to the redwater caused by the piroplasma bigeminum, and that an intercurrent infection may cause a breakdown in the immunity and the appearance of hæmoglobin in the urine. An accident such as a parturition may be the exciting cause of such a breakdown, and this is assisted by sepsis occurring at the parturition. The sepsis may be theoretically of little account, but it is sufficient to allow the piroplasmata to multiply and invade the corpuscles. To again quote, I would draw attention to the following statement:—"I have had blood films from affected cows frequently examined by competent microscopists, but without discovering any parasites in the blood corpuscles. Of course that is only negative evidence, but it is of some value. Perhaps it is better to say that the etiology is still unknown." Now I do not put much value on negative evidence, whatever "negative evidence" may be, nor is any weight to be attached to the failure of competent microscopists to find parasites in given films of blood. The failure to find the parasites is merely evidence that they did not see them, not that they were not there. The sentence of the quotation which strikes me most is the last one; it is so typical, so full of caution. It is interesting to note from the pre-Victorian veterinarians, quoted by Prof. Dewar that they had observed their cases on farms where redwater was common. *I should like to ask if this parturient redwater is seen in cows which have been bred and reared on farms where redwater does not occur and where it has never been seen?* It is easy enough to explain its appearance on farms where redwater occurs, and in animals brought out to farms where it is not existent if the animals come from infected farms.

The foregoing, however, is merely preliminary to the following case which I desire to describe, and which is pertinent to the whole question.

The animal, a young cow, was purchased in the Dublin Market on September 15th of the current year. It had newly calved, as shown by the discharges from uterus, as a matter of fact she had calved two days before. She was taken from the market to a field where she was turned out with others. Next day she gave five quarts of milk less than was expected. The milk was blood stained.

There is no history as to the condition of the urine. The milk steadily declined, though the blood colouring disappeared the following day. On September 19th she was observed to be passing high coloured urine, described by the owner as coffee coloured, and it foamed or frothed up when it fell on the ground. On September 20th she came into the Clinic and was seen by my colleague, Professor O'Connor, who diagnosed redwater. Her pulse was 80, the heart bounding, temperature 100·4. The next day the urine was still high coloured. The temperature was 100·8. On September 22nd she died, but I had obtained just after death blood films. The blood was thin and watery and evidently low in corpuscular count.

I regret that I had not the opportunity of obtaining films earlier, but I only returned to Dublin from vacation on the 21st. The slides made on the 22nd were sufficient, however, because everyone of them—six—showed corpuscles containing piroplasmata. Some of the corpuscles showed multiple infection by the parasites. There was in addition not only poikilocytosis, but also anisocytosis and many erythroblasts in the films. There was therefore no doubt whatsoever as to the real cause of this case of redwater occurring subsequent to parturition, the piroplasmata were readily demonstrated in the blood films. This case, it is only one I admit, is much more to the point that all the negative evidence Professor Dewar may adduce, and I hope that I may have further opportunities of examining the blood of cows affected with hæmoglobinuria immediately after parturition.

Lastly, I had the opportunity of making the post-mortem examination on the cow. The spleen I found weighed 2lb. 3½oz., it was not much increased in size, and smears made from the spleen pulp showed very few piroplasmata in the red blood corpusles. In some cases the spleen is greatly increased in size even like to an anthrax spleen, but in other cases, as in this, there is not great increase in size. Examinations of the spleen pulp may show numerous piroplasms, or, on the other hand, the parasites may be few. This I have found in experimental cases dead from inoculation of blood taken from animals suffering from redwater. There has been no difficulty in finding piroplasmata in the blood corpuscles of the peripheral blood, but in the spleen the parasites may be exceedingly few, or in an unrecognisable stage of development.

RUPTURE OF THE FLOATING COLON COMPLICATED BY RUPTURE OF THE STOMACH.

Subject.—An aged roan gelding carriage horse, 16 hands, the property of a jobmaster. The animal had been in regular work for the last twelve months, and had never had any illness previously. It was suddenly taken ill on the morning of September 18th inst., and treated by the owner for colic. I was called in to attend about 6 p.m., but being away from home my assistant, Mr. L. F. Eady, attended on my behalf.

Symptoms.—He found the horse down in the stable, unable to rise, showing signs of acute abdominal pain, evidenced by the anxious expression of countenance which it manifested. The pulse was quick, wiry, feeble, and of a running down character, which indicated signs of collapse. The membrana nictitans was highly injected, respiration accelerated, temperature subnormal. The body was bedewed with cold sweat, the ears and legs being quite cold as a result of defective circulation. Frequent tremors of the neck and fore-limbs, and great prostration were noticeable. Constant pawing of the fore-legs was a prominent symptom. Severe tympanitis was present, and the bowels were constipated, no fæces having been passed for 24 hours. Frequent arching of the neck and attempts at vomition were noticeable, and towards the end spume flowed from the nostrils.

Diagnosis.—Engorgement of the stomach, with gastric tympany, probably complicated by rupture or twist. Prognosis unfavourable.

Treatment.—An oleaginous purgative was administered, and Hypo. inj. morphia and atropine given. Mustard was applied locally to the abdomen. The colon was punctured to relieve the flatulence, and antispasmodic drenches given, but without effect. Rectal enemas were given with Read's tube but were not retained. Bandages were applied to the legs, and the animal rugged up in usual way.

As expected, the animal died the same evening, and a post-mortem was made by me the next day, the result of which verified the diagnosis.

HENRY B. EVE, M.R.C.V.S.

Folkestone.

ABSTRACTS FROM FOREIGN JOURNALS.

THE TREATMENT OF FISTULA OF THE TEAT IN THE COW.

Joseph Hamoir, of Bois-Borsu, asserts that, contrary to the statement of Cadiot and Almy in their surgical treatise, it is absolutely rare to see a fistula of the cow's teat close spontaneously. He further says that, when the cow is "dry," recovery is not obtained by the simple measures recommended by Cadiot and Almy.

Hamoir's own experience in treating these fistulas *during the period of lactation* has been unfavourable, except immediately after their establishment. In the latter cases, when the wound into the milk-canal is recent and clean-cut, success if often obtained by immediate disinfection, suturing, and subsequent protection with collodion.

The earlier this is performed the better, as the lapse of a single day after the accident prejudices the chances of success.

When the cow is "dry," however, the fistula may be cured by operation. The following is the author's procedure.

The cow is cast; and the field of operation, and the hands and instruments, are disinfected. The author remarks that it is scarcely possible to

operate under strict asepsis in the ordinary conditions of practice, but adds that absolute asepsis is not indispensable to success in this operation. The first step of the operation is to isolate the opening of the fistula by four very cleanly-cut incisions penetrating the skin and reaching the subcutaneous connective tissue.

The first two incisions follow the direction of the teat, are parallel with one another, and are each about one-fifth of an inch from the fistulous opening between them. The other two incisions, also parallel and about one-fifth of an inch from the orifice, are made above and below the latter, and at right angles with the first two incisions, which they join. The first two incisions extend about three-fifths of an inch above and below their junction with the last two. While these incisions are being made, the left hand *stretches the teat.*

The square piece of skin circumscribed by the incisions is then dissected away and removed. The fistulous passage is carefully scraped with the point of a straight bistoury. Then the flaps which remain above and below the excised square and between the first two incisions are dissected back to the limits of the incisions. Finally, the flaps are brought together and sutured, and the two first incisions are sutured also. The author uses fine interrupted sutures placed about three-tenths of an inch apart, and inserts these by aid of a fine strongly curved needle mounted in a handle.

The surfaces, being neatly united and well dried, receive several layers of collodion and iodoform. Direct reunion is the usual result.—*Annales de Méd. Vet.*

Necrosis Nodosa in the Bovine Spleen.

The nodular necrosis of the bovine liver which is caused by the necrosis bacillus is very common, though its effects vary. Often it causes fatal illness, or illness which renders slaughter advisable; but in very many cases, also, it is found incidentally during meat inspection in cattle which have appeared healthy during life. Storch, of Schmalkalden, remarks that, despite the frequency of this hepatic necrosis, he is not aware that an analogous condition of the spleen has ever been described; and he therefore records the following case, which he was able to observe before and after death.

The subject was an eighteen-month-old heifer; which had been kept tied up and had not yet been to the bull; and which suddenly refused food, ceased to ruminate, and began to groan. When she had been ill three days, Storch was called in. He found her moderately well-nourished, the coat smooth, and the conjunctivæ not reddened, but the expression was anxious. No swellings of lymphatic glands were demonstrable. The animal would not shift her position unless pushed; and the gait was very sluggish. Divergence of the elbows, similar to that seen in traumatic pericarditis, was present. The pulse was moderately accelerated, small and threadlike, but regular and equal; the heart sounds were clear; and there was no jugular pulse. The rectal temperature was 102·9 F. The respiration was quiet; there was no nasal discharge and no cough; and the lungs appeared normal to percussion and auscultation, There was no tympany; the flanks were sunken. The movements of the rumen were totally suppressed. The dung was stiff and doughy, ringed, dark-brown, and not abnormally offensive in smell. No extension of the hepatic dullness was demonstrable. The groaning was soft and expiratory, becoming louder when manual pressure was applied to the lower part of the thorax. Placing the animal with the fore-quarters low, however, did not cause increased manifestations of pain.

Two days afterwards the patient was evidently worse. She could no longer stand up without help; the groaning was louder, and the expression plaintive, The temperature was now 102 F.

The diagnosis was probable traumatic peritonitis from a foreign body; and the animal was slaughtered.

Post-mortem, no trace of peritonitis was found, and the only lesions discovered were in the spleen and kidneys. The spleen was 18 4/5th inches long, 4 4/5th inches at its greatest breadth, and 4/5th inch thick in the places free from nodules. Its capsule was wrinkled; its edges, when not thickened by nodules, were sharp. The splenic tissue, which possessed its accustomed soft consistence in the healthy portions, contained innumerable firm nodules, some of which, dirty-yellow in colour, could be seen through the serous covering of the organ. In those places, where the nodules were in immediate contact with the serous covering the latter was thickened and its surface was opaque and rough. The nodules ranged from the size of a pea to that of a plum; when cut into, their sectioned surface was lustreless, dry, and grey-yellow to grey-red in colour. Their substance could be crumbled between the fingers. At no place could any demarcation of the nodules from the splenic tissue by capsules of connective tissue be demonstrated. The larger nodules manifestly consisted of conglomerations of smaller ones about the size of cherry stones; and in some places bands of splenic tissue, from 1/12th to 1/25th inch broad, were present between these small primary nodules. The edges of the large nodules showed numerous projecting processes. The pulp and trabeculæ of the spleen were normal, apart from the necrotic centres.

The cortices of both kidneys showed some fresh infarcts, as well as a number of yellow wedges. One infarct of the left kidney was totally necrosed, its substance appearing exactly similar to that of the splenic nodules. Some other infarcts showed commencing necrosis in the form of dirty-yellow opaque points. The liver was in the condition of cloudy swelling. The stomachs showed no lesions; and the author emphasises the absence of any injury of the reticulum by a foreign body.

By a mistake the spleen and kidneys were burnt before the author had obtained material for bacteriological tests of the necrotic lesions. Full proof of the cause of the condition is therefore lacking.

Particles of the muscles were sown upon agar, which remained sterile; and the flesh was passed for consumption.—(*Berliner Tier. Woch.*)

The Treatment of Nasal Bleeding in Racehorses by Adrenalin.

Karl Hutschenreiter (*Tierärztl. Zeulralblatt*) has used adrenalin in 22 cases of bleeding from the nose in racehorses, and in the majority the treatment has been followed by good results. The causes of the bleeding varied. In six cases it would be attributed to external influences, as, for example, a fall; in seven others the author attributes it to an inborn predisposition; in two others congestive conditions were present; while in the remaining seven cases the author can only surmise a not accurately demonstrable internal cause. Most frequently the nasal bleeding appeared in the spring, at the beginning of training. This is easily accounted for by the condition of the circulatory apparatus at that time.

The author injects the adrenalin subcutaneously just in front of the shoulder. He uses a 1 in 1000 solution of adrenalin hydrochloride; and his average dose is 5 c.c. He mentions, however, that the *English* thoroughbred possesses a somewhat heightened susceptibility to the drug. In the English racer, an injection of even 2 c.c. is followed by the appearance of local sweating at the site of the injection; while stronger doses, such 4 c.c. or 5 c.c. may be followed by a general outburst of sweating.

The drug is contra-indicated in diseases of the heart, in cases where the blood pressure is high, and in pregnancy.

As a rule, the general condition is not disturbed after the injection. For twenty-four hours after giving the injection, the horse's head is kept tied up high in order that he may not gnaw the site of injection; and during this period soft food is given.—*Berliner Tier. Woch.*

Congenital Eye Disease in Pigs.

Becker, of Breslau, records the following observations. A sow gave birth to a litter of pigs, all of which were born affected with panophthalmitis. Treatment with a 1 per cent. solution of silver nitrate proved ineffectual. In the next few weeks about a dozen sows on the same breeding establishment farrowed, but in all cases the young pigs were blind. In some the bulbus oculi was completely absent; in many it was only rudimentary. The few pigs which possessed an eyeball all suffered from a pustular keratitis; which healed, it is true, naturally, but always with loss of the eyesight. Generally the final result was atrophy of the eyeball.

The sows were healthy. The parturitions took place normally, and nothing abnormal was found in the after births or in the genital passages of the sows. The majority of the young pigs throve very well; and the author thinks it interesting to note that, after some time, they learnt to find their way about their pen without colliding against obstacles.

Becker attributes the condition to in-and-in breeding; and thinks that the absence of every other explanation justifies this opinion. The boar, though quite healthy, was not free from objection on the ground of consanguinity; Becker does not indicate the precise relationship to the sows. The boar, however, was removed, and the further litters of the same sows were born free from any abnormality.—*Berliner Tier. Woch.*

W. R. C.

EASTERN COUNTIES VETERINARY MEDICAL SOCIETY.

A meeting was held on Thursday, Sept. 8th, at the Royal Assembly Rooms, Yarmouth, under very pleasant conditions. The President, Mr. Arthur Holl, of New Buckenham, and Mrs. Holl entertained the members and their wives to luncheon, and a large party assembled which also included amongst the guests the Mayor (Councillor T. W. Swindell, J.P.), who wore his chain of office, and the Mayoress. The members attending were Messrs. H. Buckingham, R. Palmer, G. Mayall, H. Low, A. H. Santy, H. P. Standley, Norwich; W. Shipley, W. Little, Yarmouth; C. Reeks, Spalding; E. W. Wright, Yoxford; W. M. Reeman, Bury St. Edmunds; J. Cleveland, Bungay; F. B. O. Taylor, Weston; H. Wilkinson, Martham; S. Smith, jun., Lowestoft; T. E. Auger, Hewer, Wymondham; A. S. Auger, Saxmundham; J. E. Kitchin, London; E. Margarson, Swaffham; Gooch, Stamford; Jack, King's Lynn; and J. Robertson, Hon. Sec., Stalham.

Visitors: Messrs. W. Shipley, jun.; A. C. Holl, New Buckenham; and Banham, Cambridge.

Letters of regret at inability to attend were received from Messrs. Leach, F. M. Wallis, E. Livock, J. Thurston, N. Almond, M. Bray, W. Bower, and S. Smith, senr.

At the close of the luncheon, the royal toast was honoured, after which the President proposed the health of the Mayor and Mayoress, remarking that the Society was very glad to be honoured by their presence. The Mayor, in his reply, said they pleased to be present at such a happy gathering. He had not expected to see any ladies, but he supposed in the veterinary profession as in every other they were running the men very hard, and he was sure the ladies would do their best to rival the gentlemen in the noble science which they practised so well. He warmly welcomed the members to Yarmouth and hoped they would have a most successfull meeting.

A group photograph was taken on the lawn outside the Assembly Rooms.

Proposed Amalgamation of Societies.

The Hon. Sec. read a letter from Mr. A. Gofton, of the Royal Dick Veterinary College, Edinburgh, in regard to the proposed amalgamation of veterinary societies, followed by a second communication reporting what had been decided in regard to it at the meeting of the National Veterinary Association. Mr. Gofton asked that the Society would contribute toward the expenses of promoting the movement estimated at approximately £20. Mr. Shipley said they would be glad to help toward the expenses, but just now they were not very well provided with funds. He moved that the Hon. Sec. write and promise a subscription, but that the amount be determined at the next meeting when they would have reached the end of their financial year.

Mr. A. S. Auger seconded, and this was carried.

New Member.

Mr. Hewer, Wymondham, was nominated by the Hon. Sec., seconded by Mr. A. S. Auger.

PRESIDENTIAL ADDRESS.

Arthur Holl, m.r.c.v.s.

Following the custom of my predecessors in accordance with the rules of the Association, I feel justified in inflicting on you a short address.

In my mind, and probably in the minds of all members of the profession, the question of the financial position of the Royal College of Veterinary surgeons requests our most serious consideration. When the Council of the College promulgated the new Bill it met with a certain amount of opposition from some of the members, perhaps in the first place because we did not appreciate the serious condition of its financial position, and because we felt that the powers demanded were too severe. Certain alterations have occurred in the Bill, whether for its good or ill I will not here say. But for the future of the profession I am of opinion that a Bill to secure the financial security of the College is a matter of great urgency. It is now to be hoped that all members will sink their differences and unite for the accomplishment of that object.

It is held that a purely voluntary subscription to the funds cannot meet the exigencies of the position, and it is also desirable that every member of the profession should feel he is doing his best to support his College. We can only trust that in the result our College will be able to do something further to improve the position of the provincial veterinary surgeon.

Suggestions have been made to centralise the examinations. I am greatly in favour of this. It is invidious that one of us should be called an English graduate, one of us a Scotch graduate, and so on when we are all passing an examination of the same standard. Surely it would be better if all students were examined at one centre. It certainly must be more economical to centralise your students than to have the expense of transferring your examiners from one centre to another.

This brings me to a question often uppermost in my mind, namely, the practical training of the veterinary student. I should welcome the time when the question of practical training in the form of compulsory pupilage should be insisted on, say for a term of two years before entering the school. By that means we should obtain men of better practical training. Our theoretical training is as nearly perfect as can be ; let us try and put our practical training on the same lines.

I should like to take this opportunity to point out that in the near future, I think in 1913, the International Conference of Veterinary Surgeons is to be held in England. I am informed that this will involve rather a large expense. Previous Conferences have been held in Buda Pesth and at The Hague, and our countrymen have been well received and entertained ; as Englishmen we are not going to allow our character for hospitality to be questioned, or the position of the profession in England to be impugned.

England of all places, with our magnificent studs of horses, breeds of cattle and sheep, must show to other countries that our advice on all questions of health and disease is equal to our responsibilities. Therefore I request each of you to be prepared to do your best to make this an epoch in the era of veterinary science in Great Britain. I understand a committee has already been formed to make arrangements for this conference.

In conclusion I would like to say a word or two on the work of our Society. Three or four times a year we meet to discuss scientific subjects, all of great interest to us as members of the veterinary profession, and of intense interest to the agriculturists of the district. We are under a distinct obligation to Mr. Jackson for coming down to read a paper on Swine erysipelas. A disease only recently recognised in Great Britain, it seems to have got a hold and is apparently occurring in increasing quantity. It is our duty to acquaint ourselves with all available details as soon as possible, and point out to our clients and the agriculturists of the county the best means to deal with it. We shall all be only too anxious to hear what Mr. Jackson has to say on the subject. (Applause).

SWINE ERYSIPELAS

By J. R. Jackson, m.r.c.v.s.

Mr. Chairman, Mr. President, and Gentlemen,—It was with great interest that I accepted Mr. Shipley's invitation to read a paper on Swine Erysipelas before the Eastern Counties Veterinary Medical Association, as this Society is composed of veterinary surgeons whose work brings them more into contact with swine than practitioners who live in districts where spaying is not general, and where pigs are kept in fewer numbers.

History.

Swine erysipelas was recognised as a specific disease of swine in France about 1846, but it was not until 1882 that Pasteur isolated and cultivated the causal bacillus.

It is of interest that the late Prof. Duguid, in the Annual Report of the Board of Agriculture for 1894, quoted a passage from a treatise written in 1847 by that grand old veterinarian Youatt, who mentioned the fact that a Mr. Cartwright was the first person to call attention to warty growths on the tricuspid valves of the hearts of pigs in this country. Mr. Cartwright gave an excellent description of the lesion we now know as verrucose endocarditis, but of course in no way connected the lesion with swine erysipelas. It is evident that the disease was attracting some notice among English veterinarians in the eighties, but it is probable that a good many of the outbreaks were then diagnosed as acute swine fever.

Sir John M'Fadyean was the first to demonstrate the presence of the disease in vegetations in pigs' hearts, I think, during 1892. Since the Board of Agriculture scheduled swine fever in 1893, a great deal more attention has been given to diseases of swine, consequently swine erysipelas is now better known and is treated with far greater respect than formerly.

During 1903 two large outbreaks of swine erysipelas were investigated by the Board's veterinary officers, while the largest and most disastrous outbreak occurred in the Chatteris district during 1905, when the disease attacked most of the pigs in a belt of fen country four miles long by one mile broad, with a death rate of 80 per cent. of the pigs attacked. The disease has not appeared in epizootic form since this Chatteris outbreak but it frequently appears in enzootic form, in which great mortality occurs among the older pigs. The English experience is that although the disease does not appear with such regularity as it does in some parts of the Continent, yet veterinarians must ever be on the look out during July, August and September for outbreaks, which may be as wide-spread and disastrous as the Chatteris outbreak I have referred to.

Distribution of the Disease.

The causal bacillus is a facultative parasite, that is, it can maintain its existence apart from the living animal body. It apparently exists in soils of certain districts and, like anthrax, is often persistent. Lydtin states that on the Continent the disease tends to become enzootic in valleys and low-lying plains which have slow-flowing streams and heavy soils, also that sandy and granite soils are comparatively free from it. This is to some extent true of its distribution in Great Britain ;

some of the worst outbreaks have occurred in the Eastern Counties on fen land, the Chatteris outbreak being the best example, but the disease is also met with in this country on every variety of soil, from the fens of the east to the hills of Wales. In certain parts of the Eastern Counties the disease is persistent and the outbreaks are often severe, but the severity of these outbreaks is largely due to the custom of keeping so many pigs in one yard and so many pigs on the same farm. No doubt the unpaved yard harbours the bacillus. In support of this statement Mr. Franklin, M.R.C.V.S., of Stevenage tells me that on certain farms in his district where the disease is persistent it is recognised that if the dung is removed from under fat pigs, letting them down on the unpaved floor, an outbreak of swine erysipelas is likely to follow. But the disease also occurs in styes in the middle of manufacturing towns where the whole of the soil in and surrounding the pig stye is paved, and where the bacillus must be introduced in foodstuffs grown on soils which harbour the bacillus, or may possibly be inoculated by biting flies or by lice.

From the Veterinary Reports received by the Board of Agriculture, the disease is found in most parts of Great Britain. No amount of isolation, exclusion or disinfection prevents sporadic outbreaks caused by a bacillus which inhabits so many kinds of soils. It is difficult to estimate the loss occasioned by the disease in Great Britain, for although the Board keep exact figures of the outbreaks which are reported to them by the police as suspected swine fever, these figures do not represent the total number of outbreaks, for so well is the mild or urticarial form known in certain localities that some people do not report this disease to the police, and cases which are reported to the police are not always reported by them to the Board. About 1000 outbreaks of swine erysipelas are diagnosed yearly by the Board's veterinary inspectors.

The Causal Bacillus.

This bacillus was discovered by Pasteur in 1882. It is a straight, slender rod with ends slightly rounded, one of the smallest of the rod-shaped organisms, measuring 1-1½ microns long by ¼ microne in breadth. It stains with any of the aniline dyes. Ziehl-Neilsen's solution of fuchsin is probably the best of these stains. It stains readily by methods of Gram, Gram-Weigert and Claudius. In the blood of animals dead of the disease it is found in ones or twos or in small masses, but in cardiac vegetations and in old bouillion cultures the bacilli often form long filaments. They are non-motile, do not form spores, but for non-sporulating organisms are unusally resistant to heat, dessication and putrefaction—a characteristic which considerably increases the difficulty of preventing the recurrence of the disease on infected premises.

Petri has made some thorough investigations on the resistance of the bacillus to heat, cooking, salting :—

(1) It is killed by slow drying in 50 to 80 hours.
(2) It is usually killed by heating to 55°C.; for five minutes, but in some cases they endure a heat of 70 C. for the same period.
(3) The ordinary methods of cooking do not kill the bacillus in joints of over two pounds weight.
(4) Salting for one month does not kill the bacillus.
(5) Any of the ordinary disinfectants may be used to kill it.

This resistance of cooking and salting is not of great importance to man, for thousands of swine erysipelas carcases have been eaten by man, but no cases of infection have been recorded, although some men have been thought to have been inoculated when dressing carcases. But this resistance to salting and cooking is of importance to swine, for pork which has not taken the salt and scraps from plates may find their way into the swill tub, and so introduce or re-introduce the disease into a herd.

Cultivation of the Bacillus.

The bacillus grows in the presence of air, but better under anærobic conditions. It grows readily at summer temperature—65° to 70°F.—a most important fact. It grows on all media except potato. Although its growth is not very characteristic in bouillon, fortunately it can be cultivated in the large quantities which are used for the preparation of those horses from which the protective serum is drawn for immunising purposes. It grows in a strikingly characteristic way in stab cultures in gelatine ; after several days the track of the inoculating needle is surrounded by delicate radiating threads, which run into the gelatine much as the bristles appear in a test tube cleaning brush. Gelatine cultures remain virulent for a considerable time. An eight months old culture has proved fatal when inoculated to a pigeon, this is of interest as suggesting the capability of the bacillus to remain virulent under ordinary climatic conditions in a stye, or soil, or in a dung hill.

Occurrence of the Bacillus in the Body

In all acute cases the bacillus is easily found in the blood, the disease is thus a septicæmia. The bacillus has been demonstrated by Jensen in the red blotches on the skin found in the urticarial form. It is most easily demonstrated in the spleen, lymphatic glands, red marrow, and on the cardiac vegetations. They also swarm in the dung and urine.

Susceptibility of Animals to the Disease.

The disease is peculiar to swine, but transmissible by inoculation to pigeons, mice, and rabbits. Horses, cattle, sheep, dogs, cats, and guinea-pigs are immune. It is believed to be pathogenic to man *though not by ingestion*, acute inflammation of the fingers and forearm has followed dressing swine erysipelas carcases. I believe that an English veterinary surgeon was quite recently thought to be suffering from this disease. The mouse and pigeon are the most susceptible animals and are used in laboratory work for the diagnosis and the study of the disease. The disease is fatal to these creatures in two to five days, when their blood contains the bacilli in great numbers. Curiously it is not so easy to infect a pig with the disease as one would imagine. Subcutaneous inoculation of even the most virulent material often fails ; a more certain way is to find a pig with swine erysipelas lesions, but this method also often fails.

Symptoms.

As the disease occurs in two forms in this country—forms which differ in virulence and in the symptoms displayed, I will describe them separately :

(1) *True, or acute swine erysipelas.* Usually only pigs of over four months and over are attacked. Sucking pigs are said to be immune, but Mr. Wragg, of the Board of Agriculture, tells me that in the Chatteris outbreak of 1905 a great many sucking pigs died of the disease when sucking sows were suffering from the disease. Pigs just weaned are sometimes attacked, as a heart showing vegetations on the valve has been received at the Board's laboratory. I have a heart to show you to-day similarly affected from a ten weeks old pig, whose age has been authenticated ; a pigeon died when inoculated with scrapings from the cardiac vegetations. I will also show you a slide and show you the bacilli from scrapings from these vegetations.

The incubative period of the disease is about three days, the attack sudden, the affected pig refuses his food and hides himself in straw ; has a temperature of from 104 to 108. Sometimes vomits, but this symptom is not so common as some text books would have you believe. The bacillus elaborates a toxin which particu-

larly attacks the nervous system, producing intoxication and great prostration, loss of power to move the limbs, particularly the hind limbs, frequently ending in paralysis.

In about six hours from the appearance of the first symptom, redness of the skin can be noticed, usually on the side of the cheek, on the ears, the throat, navel and inside the thighs. This redness is usually in the form of squares, about the area of a square inch, slightly raised above the surface of the skin, at first bright red but becoming later purple and often black. The spots rapidly coalesce, the whole ventral surface of the body and the perineal region becoming a purplish red or almost black. Frequently the shoulders and back are similarly discoloured. In prolonged cases the discoloured skin may slough in places. The eyelids are puffy and the conjunctiva injected. In very acute cases death takes place in 12-24 hours. The French recognise a very acute form, fatal in 24 hours, to which they have given the name Rouget Blanc, as no discolouration of the skin occurs. A few such cases may occur in this country, but most British veterinary surgeons agree that discolouration of the skin is constant. The skin lesions are not so easily seen in black pigs, but being raised they are easily felt. At first constipation is present, but diarrhœa soon sets in, being often blood stained, mucilaginous, differing in a way hard to explain from the diarrhœa of acute swine fever. Towards the end respiration becomes hurried, the snout and ears become cyanotic, the temperature falls before death takes place.

Duration of the disease is usually from three to five days. In those cases which are prolonged symptoms of rheumatism are common, the pig has a stilty action, walks on his toes, due to inflammation of the tendons and their sheaths and of the articular surface of the joints. The joints are swollen, and if squeezed or flexed great pain is caused. Pigs recovering from the disease are often very stiff and they complain most bitterly if moved round the stye.

The swine erysipelas bacillus has a great predilection for the endocardium, for in post-mortem examinations of acute cases large hæmorrhages are always seen, and particularly near the valves. In such cases heart symptoms are not immediately produced, but pigs which survive the acute attack often develope lesions of the valves which eventually produce valvular incompetency and death. Two-thirds of the outbreaks in this country are diagnosed by these heart lesions. In the acute form of the disease the mortality is often as high as 80% of the pigs attacked, in the Chatteris outbreak of 1905 this high figure was reached.

(2) *The Mild or Urticarial Form.*—This form has varies local names, such as "purples," "pig measles," "pig-pox," an old name was "red soldier," but this disease was then often confused with swine fever. I do not know the Eastern County popular name for this form. This mild form usually attacks pigs of above four months old, and does not spread to contact pigs as rapidly as the virulent form.

Again anorexia is the first symptom; within a few hours the characteristic, diamond shaped, red markings of the skin are to be seen, they usually remain discrete throughout the illness, passing through all the ranges of colour from bright red to purple black, becoming grey as the epidermal cells accumulate before being shed as recovery takes place. The pig buries itself in the straw, and only sucks the liquid portion of its food but seems to prefer those liquids which it finds in the chinks of the floor of the stye. The temperature is frequently 107 to 108°. Respirations are not much accelerated. Weakness of hind quarters is common. Constipation followed by diarrhœa is the rule. Often swollen joints cause the pig to walk on his toes.

At the end of three to four days recovery is very sudden, spots disappear, and gradually the pig gains flesh in a remarkable manner. No figures are available of the percentage of deaths, all things considered I should say 15% of animals attacked by this urticarial form die in this country. Occasionally, as in the virulent form, pigs remain lame for some time, and evince great pain when they move or their joints are forcibly flexed. Also death from valvular disease may be expected.

Post-Mortem Appearances.

The carcase is usually violet coloured. On cutting through the abdominal wall the superficial veins are engorged and a dark tarry blood exudes. The subcutaneous fat is violet tinged, in the peritioneal cavity a few ounces of blood stained fluid is found, while on the peritoneum hæmorrhages are plentiful, particularly noticeable on the serous coat of the stomach. The thoracic cavity contains often some blood stained fluid, while the pericardial fluid is in excess of the normal. The lungs are often deeply congested. There are large hæmorrhages and petechiæ on the pleural surfaces, pericardium and epicardium; a great number of hæmorrhages are to be seen on the auricles. On opening the orifices of the heart large hæmorrhages are found. With the exception of deeply congested mucous membranes there is nothing to note in the mouth, pharynx, or œsophagus. Gastritis and enteritis are usually present, but there is an absence of the ulcerations and diphtheritic lesions seen in swine fever. Diphtheresis is described by some writers; in consequence, for some years I have looked for this lesion in undoubted cases of swine erysipelas, and have come to the conclusion that a *true diphtheritic membrane is never present*, though *bile-stained* or *sulphur stained* catarrhal mucous surfaces of the intestines often have the appearance of diphtheresis. Another lesion is rather common and sometimes misleading; the solitary glands are often very prominent, their contents are "coring-out," and their edges being hyperæmic often have the appearance of commencing swine fever ulceration in the early stages. If the general appearance of the remainder of the hyperæmic mucous surface is taken into consideration the conclusion is come to that this prominence of the solitary glands is part of the general congestion, the glands being more vascular than the remainder of the mucous membrane are naturally more prominent. The kidney have a very characteristic appearance, a hæmorrhagic nephritis is usually present, bright red points being seen on the surface and on section. The lymphatic glands throughout the body are swollen, deeply congested, and of a dark purple colour. The spleen is usually moderately enlarged, the capsule being quite tense and bright red; extravasations of blood are seen under the capsule. I have made a practice of opening the fetlock, knee and hock joints of pigs dead of erysipelas, and *in a great many arthritis is present*, while erosions of the articular surfaces are common. I also slit up the sheaths of the flexor tendons, and have frequently found a yellow coagulated inflammatory exudate. During the last few weeks I have made an effort to procure some of these joint lesions, but have failed. In a big outbreak near Cheltenham the joints of the majority of the survivors had anchylosed, in a few pigs the whole of the joints of the forelimbs had anchylosed, the pigs using their limbs as a man uses crutches.

The disease often becomes chronic in both the virulent and the urticarial forms, when growths take place on the valves of the heart—as often on the tricuspid as on the mitral, and sometimes both sets of valves in the same pig. I have seen vegetations on the semi-lunar valves. Often a pig regains comparatively good health before succumbing to verrucose endocarditis.

Differential Diagnosis.

Our great difficulty is to distinguish acute swine erysipelas from acute swine fever. Without a post mortem examination or a second visit it sometimes is impossible to say which disease is present. Speaking generally, swine fever *is a disease of store pigs*, there is a history of recent movement of pigs on to premises, an absence of the diamond shaped patches, though the discolouration of the skin in swine fever in this connection must be remembered; lastly, there are the lesions of swine fever.

Speaking generally swine erysipelas *is a disease of fat or fatting pigs;* the onset is more sudden, there is no history of recent movements and for big, strong pigs death is more sudden than in swine fever: then there is th · absence of swine fever lesions.

Before opening a pig which has died suddenly, enquiry should be always made for recent deaths of other animals and the likelihood of the pigs having eaten their carcase. Swelling of the throat should make one suspicious of anthrax. In some pigs' throats swelling is not so easy to distinguish; any œdema which a cut through the skin of the neck discloses should be microscopically examined. Death from heat stroke, overcrowding, etc., veterinary surgeons should not have much difficulty in distinguishing from swine erysipelas.

Prognosis. In the severe form of the disease death may occur in 12 hours, but usually the patient lives for from two or three days, the mortality being as high as 80 per cent., the consequence to the owner can be imagined when it is remembered that this is a disease of adult pigs. The mild or urticarial form of the disease runs a course of only three to four days, when recovery is very rapid, and unless verrucose endocarditis develops recovery is complete. In this form there is a mortality of about 15 per cent. of pigs attacked.

Treatment of an Outbreak.

Instant removal of the healthy pigs to a clean stye, as the first affected pig will have impregnated the stye or yard with the bacilli in his fæces and urine. To make this separation the thermometer is useful to detect pigs in the incubative stages. As at the outset one cannot always tell whether the disease is of the mild or virulent type, it is better to safeguard the owner by advising him to slaughter all the marketable pigs, and examine for him all their carcases before they are marketed. Again, the temperature of all these pigs should be taken before slaughter, for it is of little use to kill a pig whose temperature is 104° or upwards as his carcase would certainly come out of the scald tub too red to be marketable. Visibly affected pigs and those separated by the thermometer should be put together into a house whose floor can be disinfected In this febrile state a good bed of straw is a necessity. The preliminary constipation should be overcome with mild purgatives, linseed oil in four to ten ounce doses according to the weight of the pig, given in milk, etc., is to be preferred to more drastic remedies, as gastritis and enteritis have to be remembered. The purge should be given with judgment, as diarrhœa usually follows the constipation.

Febrifuges are useful; Mr. Franklin of Stevenage has had a large experience of this disease, he prefers salicylate of soda in doses of 1 drachm to a 20 stone pig (London stone) three times a day in milk. If the pig will not drink this drug it is not worth while to try to drench him. Mr. Franklin has tried 10 c.c. doses of swine erysipelas serum without success, and it is doubtful whether this serum even in large doses would have any curative effect, but this serum can play an important part in protecting the pigs which are not ripe enough to market, breeding pigs, and those pigs which for some reason or other the owner decides not to kill.

Pasteur, as in so many bacterial diseases, was the first to investigate a method of immunising pigs against the disease, but as his method had failings and is now obsolete I will not describe it. Lorenz of Darmstadt elaborated a better method, which has since been improved by Leclainche. At first his serum was obtained from sheep and goats, but now horses are inoculated with small but subsequently with increasing doses of live broth cultures of swine erysipelas bacilli, until at the end of a period of usually three months a half litre of culture is given. Serum from such a horse when inoculated subcutaneously to a pig has the power to protect it against swine erysipelas for about ten days, at the end of which period a certain amount of live culture may be inoculated to this pig and repeated in a week's time without producing death but only a mild attack of the disease, which confers immunity for about twelve months. Leclainche advises when the disease has broken out to inject all the pigs with 10—20 cc. of serum, which proceeding greatly reduces the risk of the subsequent inoculation with live culture. In no case should a pig with high temperature receive culture. In ten days a mixture of 5 c.c. of serum with an additional 1 c.c. for every 20 lbs of live weight over 100 lbs. and ·5 c.c. of live culture is given.

In Wurtemberg in 1896-8, 17,000 pigs were inoculated and only 13 accidental cases due to the inoculation resulted. It failed to protect 16 pigs from the disease, but 3,254 non-vaccinated pigs died of the disease. In 1904 in Belgium, 15,000 pigs were inoculated without accident, the death rate among these pigs was *nil*, while among non-inoculated pigs in the same district the death rate was high.

These figures—and there are many others giving similar results—are impressive, and conclusively prove the value of serum, but I think you will be more interested to hear the results obtained by a veterinary surgeon in this country. About two years ago Mr. Franklin, M.R.C.V.S., of Stevenage, consulted Sir J. M'Fadyean concerning a disease which he suspected to be swine erysipelas and was making pig farming almost impossible for a very valuable client of his. Sir J. M'Fadyean confirmed the presence of the disease, and advised disinfection, etc. Disinfection was tried for twelve months, but quite failed to stay the disease. Sir John M'Fadyean then advised Mr. Franklin to consult my chief, Mr. Stockman, of the Board of Agriculture. Mr. Stockman strongly advocated serum treatment and gave Mr. Franklin all the necessary particulars. Recently I wrote to Mr. Franklin, asking him to allow me to lay his results and the benefit of his practical experience of the working of this process before this meeting. His response was most generous; he came to London to the Board's laboratory, and gave me the following information.

The owner of the farm on which the immunisations have been carried out sends 700 fat pigs to market annually. Before immunisation was resorted to he lost 10 per cent. of his pigs—mind you, not small pigs but 10 per cent. of his fat pigs; his losses were increasing annually, and it meant abandoning pig breeding and fattening unless a remedy could be found. All pigs between three and four months old have been immunised during the last two years, with this happy result, instead of a 10 per cent. loss only two or three slight cases occurred during 1909, but recently, probably through some variation in the virulence of the culture or some other undiscovered cause, ten cases have occurred, six of them resulting fatally. The figures speak for themselves, both veterinary surgeon and owner are pleased, and the immunisations will be continued.

Mr. Franklin obtains his serum from the Chemical Supply Co., who obtain the serum from Germany. At first Mr. Franklin followed the directions of the makers of the serum, which were identical with Leclainche's

method which I have described, *he now injects the serum alone for the first inoculation*:—1 c.c. of serum to each 20 lb. of live weight, followed six or seven days later by the inoculation of .5 c.c. of culture. Experience has led Mr. Franklin to recommend the adoption of the following method of carrying out the inoculations.

The pigs to be inoculated should be driven along an alley way so narrow that the pigs must proceed in single file. If an alley way cannot be found in any of the farm buildings, one can be constructed with hurdles leading out of the pig pens. A board or hurdle is dropped behind the leading pig, a noose is slipped into his mouth and he is pulled hard up to a ring let into the floor or screwed into the bottom of a post. The outside of the ear is rubbed with a disinfectant, Mr. Franklin prefers Lysol for its cleansing properties. The serum or culture is injected under the skin at the base of the ear. Syringes, needles, utensils used to hold serum or culture should be boiled immediately before use. A 10 c.c. "Record" syringe, or any syringe with a solid piston is to be preferred, as an ineffective piston may allow live culture to escape which may come in contact with pigs that have not received the protective serum. A fine needle is also to be preferred. Mr. Franklin found that at first pigs, in their unreasoning way, broke lots of these fine needles, he now passes them through a candle flame, which takes out the temper, and has used a small needle so treated to inoculate 100 pigs. At first Mr. Franklin used a paint to mark the pigs into which he had injected serum, but he found that pigs with their fondness for rubbing often obliterated these marks in a week, and once or twice he dared not inject the culture to these unmarked pigs as he could not be sure they had received the protecting serum. He strongly urges, therefore, that as pigs receive the serum an ear should be marked with a punch. I need not labour the point, as it will be apparent to you that if by a mistake live culture is inoculated to an unprotected pig a fatal result is likely to follow. Again, *the greatest care should be taken that none of the culture be spilt*, and it is wise to thoroughly disinfect the ground were the operation has taken place, also the boots, hands of the operator and attendants.

The experience of the makers of the serum has shown that a certain dose of serum, according to the weight of the pig, would be necessary to control the action of the ½ c.c. of culture, but yet to allow the culture to cause a mild attack of the disease in order to confer the immunity. Too much serum prevents the action of culture, and no immunity results. Too little serum leaves the culture only partially controlled, and death may result. It is better therefore not to judge the animal's weight *by eye alone*, but to put some into hamper and weigh them. After a few have been weighed you get your "eye in," and are far less likely to make a mistake. It is wise to only take up 5c.c. of culture into your syringe rather than, say 10c.c., for it is next to impossible to judge .5c.c. doses when pigs are struggling.

Another word of caution is necessary—before recommending immunisation against swine erysipelas be very very sure that you are dealing with an outbreak of that disease, for in this method, as in all methods of immunitation where a live culture is used or a mild attack of the disease is set up, there is always a danger of establishing the disease on clean premises if your diagnosis be wrong.

Now I come to the really important part of the paper. I have pointed out the advantage of this system of immunisation to the owner of the swine, but I have not shown why a practitioner should descend from the dignity of horse practice to pig practice. Of course it is a question of pay. Mr. Franklin says that as on the farm on which he has carried out these immunisations a special yard has been made, a weigh bridge is handy, and the men are trained, he is sufficiently remunerated by a charge of 1/- per head. But on a farm where the number of pigs to be immunised are few, where assistance is unskilled a charge of 2/- per head should be made. As English practitioners know their business far better than I do, it is probably presumption on my part to say that they have not advocated the use of serum and vaccines to their clients as much as they might have done. I say this because the use of serums and vaccines is largely on the increase on the Continent; in Holland especially the Government issues various serums, etc., free to veterinary surgeons in return for properly kept statistics, and practitioners derive a good portion of their income from their use. It will probably be urged that the conservatism of the British farmer rejects new methods, but, gentlemen, are there not signs that in the agricultural revival which now appears to be imminent this conservatism will be broken down, and that the more progressive race of farmers which is springing up will be quick to see that a 5 per cent. or 10 per cent. loss of stock through a disease that can be prevented, means the difference between success or failure.

I have tried to explain in this paper a practical method of immunisation, and have tried to point out the difficulties which may confront the practitioner when first using the method; with experience you will probably vary the methods I have advocated to suit the peculiarities of your districts. In the discussion which I hope will follow I hope to gather useful information of the prevalence of the disease, and if difficulties occur to you which I have not touched upon I hope that between us we shall find a means of combatting them.

I thank you for listening to my paper so patiently, and with the Chairman's permission I will show you the specimens, cultures, etc., that I have brought with me.

Discussion.

Mr. Shipley said he felt very much inclined to shake hands with himself for being able to get Mr. Jackson to give them this important and interesting paper, one of the best ever put before the Society. (App.) It was quite a change, because he had introduced to them the experience of an English veterinary surgeon on a disease which to a great many veterinary surgeons is more or less unknown. Now they had some idea of the prevalence of this disease, its symptoms, and the lesions, they would be able to deal with it. He was inclined to think that the disease was more common in youth than they appreciated. As an inspector under the Board of Agriculture he had investigated a great many outbreaks of disease, either swine fever or swine erysipelas. He was often called to a dead pig, and the man has said he never was a good doer, and "he did not like the look of him when he was a little one." As soon as he made a post-mortem he had found the chronic or valvular form of swine erysipelas. He thought it occurred very frequently, but was unobserved. The recurrence of the disease on farms was a matter of very great importance. He had noticed that invariably on certain premises, time after time, a pig has died suddenly, it has been reported, and was found to be swine erysipelas. He called to mind one or two places where he advised a man not to keep his pigs as it was an old barn, where as soon as a pig got big enough to root up the floor, sure enough one or two of them died. The urticarial form with blotches on the skin he had seen in many cases. He remembered an instance in which huge patches of skin as big as the palm of his hand sloughed quite out. There was one thing denoting symptoms of the disease which Mr. Jackson had not mentioned, that is the peculiar breathing; a sort of jerky breathing, and one noticed the pig shake its sides. He took this to be one of the positive indications of the chronic form of swine erysipelas. The commonly termed cramp in pigs he believed was in every case chronic swine erysipelas.

It might be only an opinion, which he could not prove, but he had found so many cases on post-mortem to reveal the chronic form of this disease. In this he was of course speaking of the Eastern Counties.

From the urticarial form of swine erysipelas he had generally found the animals recovered; certainly he had not found many fatal cases. The position he often found himself in was that a poor cottager asked his advice as to what was the best thing to do. Sometimes he had advised a dose of castor oil, and in other cases where the treatment had been in his own hands he found a dose of ordinary Epsom salts had done as much good as anything.

As to post-mortem appearances, he found in many cases on opening the abdomen streaks of lymph. This coagulated lymph also occurred in the thorax—nearly always associated with pericarditis in some form or another. In some cases of course there was a great quantity of fluid.

The diphtheritic exudate found in swine fever was never found in swine erysipelas, but enlargements were found sometime sloughing off in the centre. It was sometimes very confusing when comparing the two diseases of swine fever and swine erysipelas, and they were landed in a difficulty, but fortunately local inspectors could throw that responsibility on Mr. Jackson, or some other officer of the Board of Agriculture. He did not know it had ever occurred in his experience, but the two diseases might occur at the same time, and he would like to hear Mr. Jackson's opinion as to that. Treatment by inoculation of serum would be a difficult matter, because if a man was told it would cost him a shilling per head he would probably say he could not afford it. The experience related of inoculation was very valuable, and no doubt it should be carried out, but until recently their knowledge had been limited, but every veterinary surgeon should recognise that the disease exists, and not treat it in what he might call a light-hearted manner. So far as Norfolk is concerned he did not know it had ever occurred in an enzootic manner. He was certain that the loss of pigs in the county from swine erysipelas was quite as severe if not more severe than from swine fever, the Board of Agriculture should make it known to pig keeper—and especially small pig keepers. The necessity of disinfection of pigsties should be impressed upon them to prevent any recurrence of the disease. He was not at all sure that it had not become far more prevalent in the last few years, but that might be because they had not recognised it in earlier years. He congratulated Mr. Jackson on his excellent paper, and the members upon having such a fine paper upon the subject.

Mr. BANHAM said he had had this disease go through his system. He got inoculated on the hand and had the characteristic lesions of the skin, and it spread from the hand. He had swelling and urticarial eruption on the back of the neck and hand. He told one doctor he thought it proved what he had always considered to be two diseases were one, the ordinary form of the urticarial disease of the pig and the virulent form which killed the animal. He had always looked upon them as two seperate diseases though one usually treated them as the same disease. When he told another eminent doctor the same story he said, "No, not at all, for when you get any poison into your system you may have urticarial eruption." It was not therefore proved that the virulent and the mild form are one and the same disease. Mr. Jackson told them that inoculation could be done at a profit for 1/- per head, or Mr. Franklin had said so. He did not know what the serum cost Mr. Franklin, but he sent to him for some, and he was good enough to send it. He got some to replenish his stock and the little he got cost him 6/-, so he did not see how Mr. Franklin could inoculate pigs at a profit at 1/- per head, 20 c.c. being a dose as a curative, not more than a dozen pigs could be inoculated with the quantity he got for 6/-. The pigs were generally big, fat, heavy pigs, and Mr. Jackson recommended 5 c.c. per 100 lbs live weight. Even so there was not much profit for practitioners, and there were not many men in Cambridgeshire who would pay more than 1/- per head. Sometimes they would be very pleased to take 2/6 for their young pigs, or even to give them away to get rid of them. He was doubtful whether the immunising of pigs would ever become anything like common amongst ordinary practitioners.

With regard to the heart lesions, Mr. Jackson, of course, had examined a good many, and he had never examined one microscopically, but he knew the lesions are very common in pigs of all ages. He had found them in pigs five or six weeks old, and they were very common in fat pigs without any skin lesions, and the owners did not know they had ever had skin lesions. He was rather inclined to Mr. Shipley's opinion—that most of the cramp in pigs might be swine erysipelas, which would account for the heart lesions in youth. Everybody knew young pigs are very subject to cramp, but he had looked upon these heart lesions rather as being hereditary. Certain litters appear to have them, and the pigs die off one after another, and never seem to do. They never get fat, but hang on and eventually die. He was afraid the ordinary practitioner cannot very well examine these lesions for himself. There ought to be some place to which he could send them without any cost where they could be examined and an opinion given as to whether the lesions contain the erysipelas bacillus or not. The ordinary practitioner can never expect to diagnose these things microscopically, for it needs daily practice to keep one's eye in and for staining and manipulating the slides, to do it with any degree of expertness.

Mr. H. LOW said his experience was rather limited, but he had met several different cases, and he noticed heart lesions were not present in an acute form in some cases but there was a tremendous discolouration, fluid in the abdominal cavity, and also in the thorax and heart sac, frequently without any valvular lesions at all. With regard to the presence of swine fever in conjunction with swine erysipelas, he called to mind a post mortem on a large breeding sow very fat, in quite good condition, heavy in pig, with general discolouration of the carcase and a blood coloured fluid in the abdominal cavity, thorax, and heart sac. He also found appearances of ulceration of the bowels healing up; the necrotic portion sloughed away. He had two cases of this sort, and both, to his mind, died from swine erysipelas, having recovered from a previous attack of swine fever.

Mr. MAYALL said they were greatly indebted to Mr. Jackson for the first lucid oral pronouncement given in this country on the subject of swine erysipelas. It was shown that if clinical observation had been approached with a broader mind and keener desire for investigation than from the point of view of declaring almost every disease of the pig as swine fever, there would have been more numerous and exact records and statistics of swine erysipelas than at present exist in this country. He felt certain he had seen several cases of the disease in the Eastern Counties—which are pig counties, and continental observers have said the Suffolk pig is peculiarly liable to swine erysipelas. They have also said, which he did not think is correct, that the great white Yorkshire is exempt. It is also recognised on the continent and similarly here that the disease is most prevalent in summer. It declines in the autumn, and only occurs in sporadic outbreaks in the winter time. They recognise that it occurs in badly drained, damp places, and that there were three forms, acute, mild and chronic. To every day practitioners the most important point is to distinguish between swine erysipelas and swine fever. As a rule swine erysipelas kills more quickly than swine fever, and it is stated that on pressure on the skin over the livid spots the discolouration will disappear, reappearing on re-

moval of the pressure. This might not be altogether correct, but he thought there was something in it. He wondered if Mr. Jackson had ever seen a pig that had recovered from the disease in which the skin of the ears, nose, and point of the tail was necrotic, absolutely mortifying. Mr. Banham touched on the fact of illness being communicated to man. There had been several recorded cases, both of lesions on the man's skin, and on workers on cultures of the bacilli. It is said that the illness lasts four weeks and that a cure is brought about in the human subject by a subcutaneous injection 10 c.c. of serum. He did not hear Mr. Jackson call attention to the danger of spreading the disease, especially where pigs are killed on the homestead, from the washings. Where the washings are not thoroughly cleaned away other pigs may be infected from them. He would like to know whether a pig suffering from chronic endocarditis was capable of spreading disease amongst its companions. Mr. Banham called attention to the high cost of serum. In Germany serum is used almost all over the country, and veterinary surgeons make very good use of it. There are two kinds, both made by private firms, and one serum made by the Government. In Germany a dose costs about threepence. If serum were manufactured here in greater quantity, the dearness of the dose could be easily got over.

Mr. A. S. Auger said that when he was an inspector he was called to two pigs, one in a state of very high fever, about 104°. It did not seem a proper case for slaughter, and he thought with a charge of diet it would get all right. Although it was hot weather the pigs were in a shady place, and he did not think it was a case of sunstroke. This pig got over it, but to his amazement it sloughed a piece of skin and fatty tissue, which when separated weighed 6¾lbs. Of course there was a hole in the back of the shoulder, but otherwise the pig was all right. He wished to thank Mr. Jackson for his valuable paper.

Mr. Reeman said he got inoculated when making a post-mortem, but his finger was painted with icthyol solution, which checked the disease. He did not suffer any constitutional disturbance whilst the disease was in progress, but it was a fortnight before his hand recovered. His experience was that no breed of pigs was more immune than any other. He had seen the disease in almost every kind of pigs. It was more prevalent in the summer months than in winter. As to sloughing, he remembered one case where he had the curiosity to measure the slough, and found it to be eleven inches, and he never saw such an object as the pig looked. It was a big pig, weighing 16½ stone, the skin sloughed but the animal recovered. It seemed strange to find the virulent form in a few pigs, while others with them did not seem to suffer. A fortnight ago he was called to a place where four pigs died very quickly. All the others seemed to recover, though there was stiffness and they walked in stilted fashion on their toes. They were going on all right now. He always noticed this kind of cramp after an attack.

Mr. Banham said the best remedy if one got inoculated was to paint the affected part with iodine, which a medical man told him was a specific for erysipelas swelling.

Mr. Gooch said there was very little of this disease in his district. He saw very little of it prior to 1902, when Sir John M'Fadyean found the bacillus of the disease causing the fungoid growth of the heart. What little he had had was nearly always a solitary case in the stye of a labouring man who kept one pig. All that he had seen had been in pigs of four months and upward. Mr. Jackson, when he came to the question of charges for inoculation, said it was perhaps the most important part of his paper; but from a veterinary standpoint he considered the first part most important. They could not, of course, help looking at the economic question, but he thought it almost impossible for veterinary surgeons to go in for the serum treatment unless they had a proper source from which to get their sera, and it should be under proper control.

On the Continent the veterinary surgeon was placed in a different position. The serum is under Government control and he has tremendous support from the Government financially, whereas here the practitioner had no support, and had to obtain sera where he could. It was not standardized, and it was not under control. He hoped the time was not far distant when the whole of the sera used by the veterinary profession will emanate from one source—the Board of Agriculture or some public health body—that when a veterinary surgeon buys a serum he will know that it is of a certain standard, can be relied upon, and will answer the purpose for which it is made. The reason why at present they got different conditions and results was simply because there is not a proper standard of serum.

He would like to ask Mr. Jackson whether if a pig suffering from a mild form is slaughtered, say up to 20 stones weight, he considered it fit for human food. It had been the custom when they had a mild urticarial case, if the pig was fit for the butcher, to have it butchered, and the people in the village ate it without bad results, so far as he knew.

Mr. Santy said he was probably the oldest veterinary surgeon in the room, and getting to be very nearly the oldest member of the profession, Alas! but he could remember this disease 45 years ago. He recalled a big old sow that had it exactly as they saw it in the specimens. Sloughing, as Mr. Gooch mentioned, took place, and both hocks sloughed off completely. The animal got well, granulation took place, and she went about on the stumps like crutches, and was killed. It was no new disease.

Mr. Wright said a month since he was called to a place to castrate some pigs, but when he saw them they had urticaria on the back and ears. The back was very much discoloured, just like a chronic case in one of the specimens. He declined to operate, and the same morning one pig died. He made a post-mortem and found gastro-enteritis, while the liver was three times the size it should be. He came to the conclusion that it was a chronic case. Since then he had another case which he reported and Mr. Jurgensen came down. The viscera were sent to the Board of Agriculture and returned as not swine fever. He often found urticaria amongst small pigs which were ill for a few days and then got well. It was not often seen in big pigs, and it occurred more in summer than in winter. He had four cases of chronic lameness, or cramp, on one place and he advised his client to pull up the floor and put down a fresh one. More care should be taken, as infection from mild cases might occur at sale grounds unless they are very thoroughly disinfected. The pig which had the enlarged liver was twelve weeks old. His son made the post mortem, and a few days after visited a barber who told him he had barber's rash. It looked like ringworm or erysipelas, and some ointment was put on. It subsided after three weeks, but he believed it was erysipelas.

Mr. A. S. Auger asked if there was a possibility of swine erysipelas being communicated by inhalation. He made a post mortem and found an eruption on his arm three or four days later. Spots came out with a great deal of discolouration, and they reached the size of a fourpenny piece. He was not aware of having any skin abrasion, and he was pretty certain he was well protected. He rubbed his hands over with resin ointment if he had no gloves. He, therefore, wondered whether the disease could be inhaled.

Mr. Buckingham asked if kidney lesion was always present with heart lesions.

Mr. JACKSON then replied upon the discussion. In answer to Mr. Banham as to the similarity of the virulent and mild forms, he said they might take it that they are the same disease, but differing in virulence. Mr. Franklin told him he could obtain the serum at 4d. per dose, and he was satisfied with 1s. per head where there were special arrangements and large herds. On farms where there were fewer pigs he suggested 2s. per head, but veterinary surgeons should try these things to see how they work out. Mr. Banham did not think there are many pigs with swine erysipelas in the Eastern Counties, but pigs are kept in great numbers around Bury St. Edmunds, and he once asked a farmer how many he had and found he did not know within a hundred. Pigs are constantly treading into dung. A farmer asks his foreman how the pigs are doing, and the foreman does not often care to risk telling him some have been lost. Probably a 10 per cent. loss is due to swine erysipelas. Such a farmer wants approaching and informing how he can probably turn that loss into profit. He believed people will take this up when these things are pointed out to them. He was pleased to hear everybody talk about the rheumatic lesions. He had always been in the habit of opening all joints, and there were very few cases in which he did not find arthritis. In the tendon sheaths there was an inflammatory fluid that must cause intense pain, and which accounts for the pigs walking on their toes. A litter of pigs that did not do well was mentioned, and it struck him that they had probably been exposed to the same infection.

With regard to sending up lesions, he was sure he had Mr. Stockman's permission to say that if they sent up lesions to them they would do their best, and give their opinion.

Mr. BANHAM: We do not often get the Board's opinion.

Mr. JACKSON: In swine fever. If you had fifty to reply to you would understand.

Everybody seemed to have had a touch of blood poisoning, but it was not proved that this was really swine erysipelas. That was only the doctor's opinion, on their suggestion, but there are so many microbes that many cause blood poisoning. He recently had the same thing as Mr. Reeman, and some bloodthirsty young surgeon wanted to take his arm off, but he protested, and he had his arm still. As to Mr. Shipley's description of the symptoms produced by valvular disease, he did not make a point of this because he lumped it under the head of valvular incompetency. Mr. Shipley described it very well, and it was what one would expect where there is regurgitation of blood. Mr. Shipley put the mortality a bit lower than he had done. At first he was inclined to say 10 per cent., but he looked through lots of papers and he thought he was safe in saying 15 per cent die. They got 1,000 outbreaks and 600 of them are diagnosed by heart lesions. Mr. Banham said he frequently found these heart lesions. He quite agreed that any number of pigs get them. The lesions do not kill, and the pigs go on to a happy end.

Mr. Shipley mentioned an interesting case of coagulated lymph in the peritoneal cavity. He did not mention in his paper that in pneumonia of young swine they would find all the young pigs start coughing, and they had this laboured pericarditis. In many cases lesions were set up, and they were never certain that swine fever was not present. He was not so sure it was a symptom of swine erysipelas. The co-existence of swine erysipelas and swine fever was a burning question a little time ago, but it was found there were only about a hundred cases of swine fever in which heart lesions existed, and it was concluded they were only coincidental. It was possible for a pig to take swine erysipelas first and swine fever later or *vice versa*. With regard to the prevalence of the disease in the Eastern Counties, he had one dreadful outbreak near King's Lynn. Luckily it was a big farmer, who lost fifty pigs worth £4 each. It would have been ruin to a small farmer. Veterinary surgeons should rush in to save a man from a disaster like that.

He believed swine fever is on the increase, which also may be due to foreign feeding stuffs. These came over in enormous quantities last year, when it was impossible to get a good oat. We had foot-and-mouth through Dutch hay. It was likely that mixed meals might contain the germs of swine ersipelas, which they knew lived so long.

Mr. Auger's instance of sloughing was most interesting. Probably it was due to swine erysipelas, but it might be due to inoculation with some other germ, for there was every facility for a germ to multiply in practically necrosed tissue. This tissue of low vitality in which the bloon stream is cut off is a favourable field for any other microbe to get to work and cause sloughing.

He knew of nothing to prove whether swine erysipelas can be conveyed by inhalation. In man ingestion does not seem to make much difference. Bacilli may dry into dust, and man may breathe it, but he did not think he was very susceptible. As to not knowing whether there are any abrasions on one's hands, one never knew whether there was not some breach on the surface of the hands or nails. He often doubted whether disinfectants are of any good because they must be in contact with microbes for six days before it does any good. In the laboratory he did not believe in disinfectants—they could not be kept in contact long enough. He much preferred soap and water and sweeping them off. He did not know that disinfectants were any important protection to the hands.

Mr. GOOCH raised a very important point as to the Government control of serum Mr. Stockman was quite alive to the seriousness of Government control of mallein and tuberculin. Tuberculin had got English pedigree cattle breeders a very bad name, and Argentine Commissioners were loud in their complaints of the dishonest use tuberculin is put to. With regard to the price of serum, demand would create a supply, but they could not get a serum station as they could not get enough money to run a laboratory. It was the policy of the Government to allow all these things to be built up by private enterprise. It was a foolish policy, but still it was done.

Mr. Santy's case was very interesting because it showed how long the disease has been in this country. Mr. Low quoted a case of swine fever in conjunction with swine erysipelas. It very often happened. Swine fever of older standing and then swine erysipelas. In answer to Mr. Mayall he would say that the Continental statement that Suffolk pigs are more liable is one of those things that grow up through the text books. Someone writes it, and then it is reprodueed in every subsequent text book. Suffolk pigs are not more liable, but there are more of them. The urticularial form of swine fever is particularly common in Yorkshire, and great losses occur amongst colliers' pigs from it. That the disease is more prevalent in summer than in winter is due to the temperature. If the bacilli are lying in a suitable medium they will multiply very quickly, and there is a greater chance of infection. Swine erysipelas kills more quickly than swine fever. As to the pressure of the hand on erysipelas lesions mentioned by Mr. Mayall, this was true of all lesions in the human being, but it is not much to go upon. In the human being a curative serum was used because the doctors did not know what else to use, but it would take a pint to do animals any good. This treatment of pigs has been tried, aud it has quite failed. Leclainche said 20 doses must be given. In Holland it was supplied at 3d. per dose quite easily, and it might be brought down to 3d. a dose in this country when the demand is greater.

In answer to Mr. Wright, he did not know that an enlarged liver is characteristic of swine erysipelas. Such a pig may have been in a state of chronic venous con-

gestion, and cirrhosis of the liver is a very common thing. Preceding cirrhosis theis is enlargement: he would not mention it as a characteristic of swine erysipelas. In reply to Mr. Buckingham, who asked if kidney lesions are always present with heart lesions, he would say no; because kidney lesion is the result of the acute disease, and the heart lesion the result of the chronic disease.

The PRESIDENT then moved a vote of thanks to Mr. Jackson for his paper, which he said all the members had very much appreciated,

The HON. SEC. seconded the vote, which was carried amid applause.

Mr. JACKSON, in his reply, said he was glad to come amongst them, as laboratory men are too much shut away in boxes, and did not meet practitioners often enough. One man could not combine the two positions, and it would be for the general benefit if they came together more often. He had been very pleased to come to their meeting and make the acquaintance of so many Eastern Counties men.

Mr. SMITH proposed a vote of thanks to the President for his hospitality, which they all enjoyed, and he congratulated him on presiding over such a successful meeting. They were fortunate in having such a gentleman as President, and they had had three successful meetings under his presidency.

The PRESIDENT briefly acknowledged the vote, and the meeting then ended. The members, who were rejoined by their wives, were then entertained to tea by the President and Mrs. Holl.

Anthrax—Prosecution at Cumrew.

At the Brampton Police Court, on Wednesday, 7th Sept.—before Messrs. F. P. Johnson, J. J. Addison, H. H. Jackson, and G. Hodgson—William Ivinson, farmer, Cumrew, was charged with removing a carcase of a heifer affected with anthrax from his premises in contravention of the Anthrax Order of 1896, and also with failing to give notice of the disease to the police, and James Ivinson, retired farmer, Cumrew, was charged with causing the carcase to be removed and the offal to be buried on August 8th.—Mr. D. Main prosecuted for the police, and Mr. E. W. Lightfoot defended.

Mr. David Main briefly explained to the Bench that the Order stated that every person having, or having had, in his possession a diseased or suspected animal should notify the police, and not remove the animal until that had been done. Anthrax was a very dangerous disease, to human life as well as stock, and it said much for the prompt action of the local authority that there had been no spread of the disease.

"I ask the Bench," Mr. Main concluded, "to take a serious view of this case, in the interests of the public, and say that the defendants have acted in a reckless and careless manner."

John Ernest Ivinson, son of William Ivinson, said he went out in the morning to bring in the fat cattle for feeding. He noticed that one was ill. He sought his uncle—his father being away from home—and when he came back the heifer was lying down. When he saw the beast again he found it had been stuck. Only his uncle was about at the time. The butcher came and skinned and dressed the animal, and the offal was buried by witness on his uncle's instructions in the stackyard.

In cross-examination the witness said he was the first person to notice that anything was the matter, and all he saw was that the beast would not eat its cake, The offal was buried three feet below the surface.

Ernest Thompson, butcher, residing at Castle Carrack, said George Willie Ivinson asked him to go to the farm to kill a beast. When he got there he found that the animal had been stabbed in the breast—an unusal procedure. He noticed nothing but a little inflammation of the spleen. After the beast had been sent away, William Ivinson asked witness if he knew what was the matter with the beast, and he said he did not know.

After a friendly passage of arms between counsel as to the alleged leading questions by Mr. Main, the latter appealed to the Bench to be allowed to treat Thompson as a hostile witness, as the evidence he was giving now was contrary to a statement he had made to the police and signed.

Mr. Lightfoot objected to this procedure, which, he said, was only adopted in the most unusual circumstances, and if it was quite clear that a witness was not telling the truth or would not answer at all. He did not think much about this hole-and-corner way of the police getting evidence, though he knew it was common enough. When the statement was obtained and signed, neither counsel nor his client was present.

Eventually the statement was put in, and Mr. Main examined witness on it. The latter admitted that the spleen was enlarged and slightly black.

Cross-examined by Mr. Lightfoot, he said he did not think there was anything suspicious about the animal.

Edward Ivinson, another son of the defendant, gave evidence relative to the despatch of the meat to Manchester. As far as he could see there was nothing wrong with the carcase.

William T. Hewitson, veterinary surgeon, spoke to certifying the blood of the heart to contain anthrax germs. If a beast was not well, and there was any suspicion about it, someone should be called in. If he had seen the spleen was enlarged and black he would have known it was anthrax. The indications should have pointed to something serious being the matter.

Cross-examined: The symptoms were various, and half the farmers in the country would not know whether it was anthrax or not. What to him would excite suspicion might only arouse the opinion in farmers that the animal was not well. He might reasonably have thought as it would not eat the cake, that it was overstocked. To physic a fat heifer would be to reduce the flesh. If there was nothing more than had been stated to arouse the suspicions of the defendants they were quite right in killing the heifer, and considering it fit for food. The diseased condition was bound to be found out at Manchester.

By Mr. Main: Considering the enlarged spleen and its black colour there should have been some further investigation.

In reply to the Chairman, he said the flesh for a period would look quite right to the average person.

Continuing, the witness said he thought the carcase should have been examined before it was sent away. It was dangerous to both stock and human beings to bury the carcase in the stackyard.

THE DEFENCE.

Mr. Lightfoot, before calling evidence for the defence, read from the Board of Agriculture Order to farmers regarding "presumption of knowledge of disease." It read as follows:—"Where the owner or person in charge of an animal is charged with an offence against the Act of 1894, relative to anthrax, he shall be presumed to have known of the existence of that disease, unless and until he shows, to the satisfaction of the court, that he had not knowledge thereof, and could not with reasonable diligence have obtained that knowledge."

"That is the answer to this case," said Mr. Lightfoot, "that the Messrs. Ivinson had no knowledge of disease, and that they used reasonable diligence. Therefore, there was no presumption of knowledge on their part in the terms of this Order. That is my defence, and I stand or fall by that. The fact that the carcase was sent to Manchester, where there are such stringent regulations, is the most conclusive evidence of innocence in this case.

DISEASES OF ANIMALS ACTS 1894 TO 1903, SUMMARY OF RETURNS.

Period.	Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Counties Affected	Sheep Scab.	Swine Fever.	
	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Animals Attacked	Out-breaks	Out-breaks.	Slaughtered. *
GT. BRITAIN. Week ended Sep. 24	18	18			10	26		2	28	234
Corresponding week in 1909 ...	25	31			15	36		2	15	201
Corresponding week in 1908 ...	17	22			22	47	Essex 5	4	41	260
Corresponding week in 1907 ...	22	24			12	29	Hertford 7	1	35	170
Total for 39 weeks, 1910	1086	1295	2	15	292	859	Kent 3 London 10 Renfrew 1	350	1090	9864
Corresponding period in 1909 ...	986	1310			420	1500		476	1323	11987
Corresponding period in 1908 ...	820	1092	3	112	635	1932		647	1593	9400
Corresponding period in 1907 ...	828	1094			667	1525		421	1961	9212

Board of Agriculture and Fisheries, Sep. 27, 1910.

								Parasitic Mange (outbreaks)			
IRELAND. Week ended Sept. 17	...	...	...	...	...	...	2	3	...	...
Corresponding Week in 1909 ...	1	1	...	...	...	...	...	...	1	6
Corresponding Week in 1908 ...	1	1	...	...	...	...	1	...	1	163
Corresponding Week in 1907 ...	...	...	...	...	...	...	1	3	2	74
Total for 38 weeks, 1910 ...	5	8	...	...	1	2	58	357	73	1712
Corresponding period in 1909 ...	6	6	...	...	...	...	67	307	86	1513
Corresponding period in 1908 ...	7	10	...	...	...	...	32	277	141	3247
Corresponding period in 1907 ...	2	4	...	...	5	9	65	195	118	2041

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Sep. 21. 1910

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

"I am prepared to admit that a prosecution in this case was inevitable, but I hope I am not exaggerating when I say it is equally inevitable, after you hear the evidence of the defendants, that they should be acquitted."

James Ivinson stated that he felled the animal before sticking it. The beast bled properly, and the blood was of a good colour. He had never seen anthrax before, and would not have touched the animal had he known.

By Mr. Main: He had never heard of the Anthrax Order. He had no suspicion whatever that anything was wrong.

William Ivinson said he had not the slightest suspicion that this was a case of anthrax. Had he been at home at the time he would have known that it was a case of anthrax. He had received one of the orders, but had not read it.

After retiring for twenty minutes the Bench decided that the defendants were not aware of the animal being attacked with anthrax, but they did consider that they did not show reasonable diligence to find out the cause of its death, and a fine of £5 and costs in each case was imposed—a total of £15 16s.

Personal.

Mr. ROBERT CADWALLADER TRIGGER, F.R.C.V.S., (Newcastle-under-Lyme), had been invited by the unanimous vote of the Town Council to accept the office of Mayor during the ensuing year, and it is gratifying now to be able to record that Mr. Trigger has acceded to the wish of his fellow-townsmen. No more popular or excellent choice could have been made. Mr. Trigger will bring to the honourable office of Chief Magistrate exceptional ability, experience, and public spirit, and the office of Mayoress will be graced by his sister Miss Trigger. The Mayor-Elect has resided in Newcastle for 40 years, and though he has never sought a seat on the Town Council, he has rendered much service of a public and semi-public kind to the town. He has been a member of the Free Library Committee ever since its inception, and its chairman for about 15 years. He is also chairman of the Newcastle Marsh Lands Trustees, and is a member of the North Staffordshire Infirmary Committee. Mr. Trigger has been a member of the Council of the Royal College of Veterinary Surgeons for over 20 years, and held the high honour of the Presidency in 1897, the Diamond Jubilee year of the late Queen Victoria, from whom Mr. Trigger, by reason of his office, received a Jubilee Medal. He was also President of the National Veterinary Association in 1905, and at the annual meeting, held at Buxton, he, together with Miss Trigger, entertained the members of the Association at a garden party at that town. In February of the present year Mr. Trigger was entertained to a complimentary banquet at the Grand Hotel, Birmingham, by the members of the Midland Counties Veterinary Association and presented with a handsome illuminated address in recognition of 20 years' service on the Council of the Royal College. The Mayor-Elect is a local veterinary inspector for the Board of Agriculture, has been frequently engaged by the Veterinary Committee of the County Council, and has held the post of veterinary inspector for the borough of Newcastle for 40 years. He is chairman of the Newcastle and District Shire Horse Society, an office he has held since the formation of the Society, and the Staffordshire Agricultural Society and several local societies holding agricultural shows have received valuable services from him at different times.—*The Staffordshire Advertiser.*

In the list of Candidates successful in the Civil Service Examination (Home, Indian, and Colonial), published on September 21st, appears the name of Mr. A. M'Fadyean, B.A. Out of the whole list Mr. M'Fadyean is placed second. He is the son of Sir John M'Fadyean, of the Royal Veterinary College, Camden Town. He was educated entirely at University College School, Hampstead, and last year took a First in "Greats" (In Litteris Humanioribus.)—*Hampstead and Highgate Express.*

ARMY VETERINARY SERVICE.

Extract from *London Gazette*,

WAR OFFICE, WHITEHALL, Sept. 27.

ARMY VETERINARY CORPS.

Capt. R. H. Holmes, to be Major. Dated Sept. 25.

The undermentioned officers from the Unattached List for the Territorial Force, to be Majors, with precedence as in the Unattached List for the Territorial Force:—

Vet.-Majs. G. Elphick, A. W. Mason, F.R.C.V.S., E. D. Johnson, W. G. B. Dickinson, J. W. Coe, F.R.C.V.S.

The undermentioned officers, from the Unattached List for the Territorial Force, to be Captains, with precedence as in the Unattached List for the Territorial Force:—

Vet.-Capts. W. T. Aulton, T. H. Hobson, J. Abson, F.R.C.V.S., H. W. Southall.

The undermentioned officers, from the Unattached List for the Territorial Force, to be Lieutenants, with precedence as in the Unattached List for the Territorial Force:—

Vet.-Lieuts. C. Drabble, F. W. Pawlett, J. Ll. C. Jones, H. Peele, R. Rawlins, H. S. Elphick, R. E. Beilby, M. Bray, J. R. Crone, M. T. Sadler, P. M. Evershed.

Vet.-Capt. J. A. Connell, late the Staffordshire (Queen's Own Royal Reg.) Imperial Yeomanry, to be Capt., with precedence as in Imperial Yeomanry.

Vet.-Lieut. C. Hartley, junior, late of the Lincolnshire Imperial Yeomanry, to be Lieut., with precedence as in the Imperial Yeomanry. Dated July 8.

W. G. Wragg to be Lieut. Dated Aug. 2.

G. McIntyre to be Lieut. Aug. 19.

OBITUARY.

JAMES WEIR, F.R.C.V.S., Glasgow.
Graduated, Glas: April, 1873: Fellow, April, 1886

Mr. Weir died on Saturday, Sept. 24, at his residence, 35 St. Andrews Drive, Pollokshields, from syncope. Aged 62.

WILLIAM BLAIR, V.S., Newton Street, Duns, Berwickshire.

Mr. Blair died on Saturday, Sept. 17. Starting life as a blacksmith, Mr. Blair eventually studied veterinary science, afterwards holding for the long period of upwards of forty years a large and lucrative practice in Duns. Mr. Blair, who was eighty years of age, retired some four years ago, and latterly resided in Berwick.

COMMUNICATIONS AND PAPERS RECEIVED:—Messrs. W. H. Dalrymple, A. E. Mettam, J. Gregg, J. R. Jackson, E. Wallis Hoare.

The Hampstead and Highgate Express. The Staffordshire Advertiser.

VETERINARY SURGEONS AND PETROL.

Sir,

In reply to Mr. Bell, I beg to enclose you two letters relating to the subject of "Veterinary Surgeons and the Petrol Tax."

When I was in Harleston I claimed and obtained exemption from the Jury List, as a "duly qualified medical practioner in practice." Therefore I think we ought to be entitled to the rebate on the motor spirit we use.

Could we in some way combine and try to obtain the same? If only the R.C.V.S. possessed more money perhaps that body might take up the question for us, who use motor cars.—Yours truly, HARBERT BUCKINGHAM.

P.S.—Why not try to obtain a small sum by means of a law court: if so, which court?

"Custom House, London, July 15th, 1910.

Sir,

I am directed by the Board of Customs and Excise to inform you, in reply to your letter of the 30th ult., that you are not as a veterinary surgeon entitled to the rebate of motor spirit duty granted in the case of duly qualified medical practitioners.—I am, sir, your obedient servant,

J. P. BYRNE, Secretary."

H. Buckingham, M.R.C.V.S.

"August 6.

Sir,

In reply to your further letter of the 22nd ult., I am directed by the Commissioners of Customs and Excise to inform you they cannot admit that, as a veterinary surgeon, you are entitled to the rebate of motor spirit duty allowed to medical practitioners. I am further directed to refer you to the replies given in the House of Commons on the 10th and 19th May, and 19th July, 1909, to questions on the subject, from which it will be seen that there was no intention to extend to veterinary surgeons the concession granted in the case of medical men.—I am, sir, your obedient servant,

J. P. BYRNE, Secretary."

H. Buckingham, M.R.C.V.S.

Sir,

I have to thank "Motorist" for his reply to my enquiry *re* licence of motor cars used by veterinary surgeons. Is it not possible for a petition to be drawn up, either by the profession or the Veterinary Medical Societies throughout the country, asking for the same privileges as the medical profession; if this is taken up by the different societies and all motorists would approach their local Members of Parliament, I am sure something would be done. I will be pleased to do my best personally in the matter, to try and get the veterinary profession put on the same footing as the medical profession with regard to motors, etc.—Yours faithfully,

JAMES GEO. BELL.

Carlisle.

GREGG'S VETERINARY DICTIONARY.

Sir,

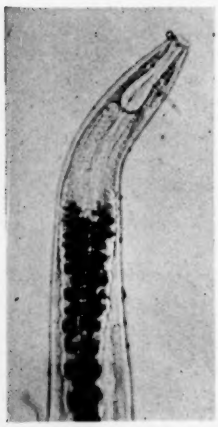
As no doubt most veterinary surgeons in the United Kingdom have, like myself, received invitations to become subscribers by return post to a "veterinary directory" about to be published, which is to explain diseases, animal medicines, their uses, doses, etc., I should like an expression of opinion from some of my brother members relative thereto before I decide on becoming a subscriber.

The term directory led me to think at first sight that the work would go on a different line and mark a new departure. May it be probable that the philanthropic intentions of the Author towards "his professional brethren" might prove the reverse of his design should it tend to create unqualified practitioners, especially as it is to be issued in parts at a few pence each.—Yours truly,

M.R.V.C.S.

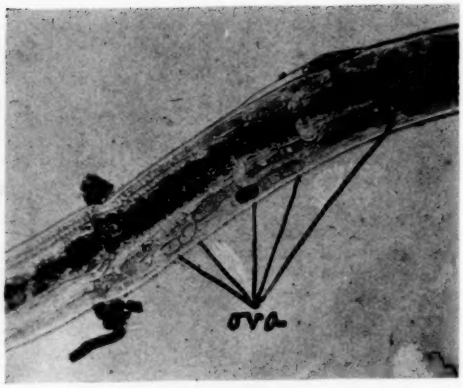
[We have seen a copy of the circular and picture, inviting subscriptions to the above modest venture, and should rather fear that its form and style would militate against any strong response to the invitation.—ED.]

1. Female containing eggs. The eggs may be seen in the worm just above the dots on the border of the worm. Obj. a_2 without ocular. Camera length 41 cm.

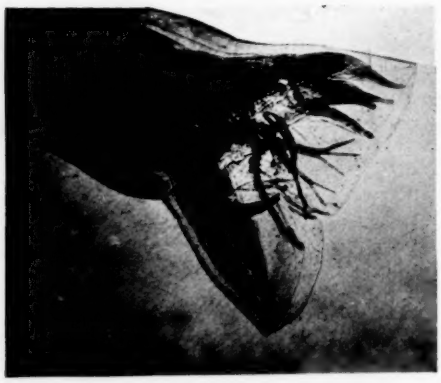


2. Cephalic end of worm. Character of mouth parts may be made out. The muscular œsophagus is well shown Obj. A. Oc. O. Camera length 41 cm.

4. Bursa of male. The delicate outline of the caudal extremity with the supporting rays may be seen. Same magnification.



3. Body of female worm (photo 1) showing ova in oviduct. Obj. A. Oc. O. Camera length 41 cm.



5. Bursa of male sclerostoma armatus, for comparison with No. 4. It is more highly magnified.

A New (?) Sclerostome of the Horse, by Prof. A. E. METTAM.

To illustrate note by Henry Taylor, F.R.C.V.S.